Menlo Park Notebook #150 [N-82-12-21]

This notebook covers the period December 1882-May 1885. The entries are by John Ott, E. D. Kellogg, and H. de C. Hamilton. There is also one entry by Edison on carbon filament experiments. The name of Martin Force appears as a witness. Included are notes by Ott on experiments with carbon filaments, clamps, vacuum pumps, and electric meters. There are also notes by Kellogg and Hamilton on insulation experiments and notes by Hamilton on condensers, storage batteries, chemically treated wrapping paper, and bleaching by electricity. The label on the front cover is marked "Sept 4 80." The book contains 264 numbered pages. The last few pages have been torn out of the book.

Blank pages not filmed: 182-183, 190-264.

LIBRARY OF THE

BOARD OF PATENT CONTROL,

120 BROADWAY, NEW YORK.

From Library
GENERAL ELECTRIC.
44 Broad St. N.Y.

May 1, 1896

Dec 21 1882 T.A.B.

Tips of Carbon filament. Carbon J.F.O.

Lampblack + Sugar dont hold on filament. ~~porous~~ porous Carbon

Lampblack + Rosin good Carbon holds well — not as well as Lamp Black and J. F. Ott MMT

Lampblack Syrup + Tar for dont stick to Carbon at all - porous Carbon J. F. Ott

Lampblack + Pitch - porous no good —

TAE.

Dec 21. 1882. 5

Lamp black and Tar
quite good adheres to
filament. J. F. Otto,
M. M. T. 1st

Dec 21. 1882

Lamp Black Gum copal
Pulp Paper & Burnt Typs

Nothing left

T. A.
M. M. T.

Pitch and Tar

Very good

Lamp Black & Antiacom

Nothing left T. A.

J. F. Otto
M. M. T.

Plumbago & Pitch

Nothing left

T.A.E.

M.N.F.

Plumbago & Syrup

Nothing left

Plumbago & burnt sugar

No good

Plumbago Syrup & Anticeine

fair T.A.E.

M.N.F.

Plumbago & Anticeine

No good

Plumbago & Syrup

No good

T.A.E.

J. F. Otte.

M.N.F.

Dec 28, 1882

Carbonized Manila
fiber twisted found
it worked well carbonized
hard glosy black.

J. F. Ott
M. N. T.

T. A. E.

Plumbago. Tar & Pitch
fair

T. A. E.
M. N. T.
Jan 6 1883

Carbonized Bambo
fiber in Linseed oil brought
up to temperature of 600 deg
Far, worked well.
Also Mella fiber

J. F. Ott
M. N. T.
T. A. E.

Jan 18. 1883

Made clamping devise to clamp fiber so as to solder it to copper wire of inside part of lamp without heating Carbon above the thick part

Soldered one with silver

" one with Tin

Also soldered with the current using the wires as conductors there breaking there forming an arc fusing the metals together also using two carbon pencels forming an arc. Also found that one pencel works well

J. F. Ott
Jr

Jan 16. 1883

Plated ends of fiber then tined them, Also tined end of Copper wire, then soldered them together with soldering Iron

J. F. Otto
M. N. T.

1 Mg

Jan 11. 1883

Twisted Manilla Fiber put in moulds and sent to Lamp Factory Newark to be Carbonized. —

J. F. Otto
M. N. T.
Tag

Jan 11. 1883

Made up a mould of Carbons and laid side by side with the fiber a thin filiment of lead about twice the diameter of the Manilla twisted fiber. When the fiber Carbonized the molten lead combined with the

asergen given of by the fiber or other substance in the mould therefore the fibe will be saved

Also tried Zinc
" " " Copper
" " " Iron
" " Tin foil

John F. Otto
M. M. F.
TCG

Jan 16, 1883

Soked Carbon moulds in Linced Oil, boiled then then put in fibers and Carbonized.

J. F. Otto
M. M. F.
TCG

Jan 18, 1883.

Made up a lot of fibes laid out straight with one fiber twisted around them Also three fibers braided together, Also six fibers as three some braided tight some loose

J. F. Otto
M. M. F.
TCG

Jan 18, 1883

Made a device for holding carbon and inside parts while admitting them to the flame for soldering and soldered them with diffg grades of silver solder

J. F. Ott
T. A.
M. N. F.

Jan. 24, 1883

Sent 54 Manilla twisted fiber to Lamp Factory to Carbonize they were twisted some Two Three Four Five. and Six them doubled and twisted again

J. F. Ott
T. A.
M. N. F.

Also braided some

Also laid Four and five fibers straight and twisted one fiber around in one direction and one in the other

T. A.
M. N. F.

Jan 26. 1863

Sent another lot to Lamp factory they Carbonized well

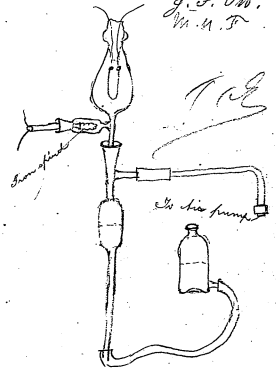
J. F. Litt
C. E.
M. N. F.

Lamp Corp Feb 3, 1883

Had glass blower make the following device per order of T. A. Edison.

G. F. Ott.
M. M. T.

T. A. E.



Lamp Exp. Feb 5, 1883

Plated Carbon filiment on both ends, then drawn small glass tubes slipped them over the plated part also the inside parts then fused them together

J. F. Ott.
M. H. Ott

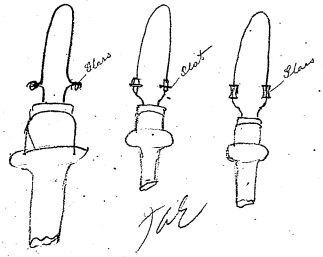


Fig 2

Lamp Exp. Feb 10 1883

Twisted Manilla fiber tied them over a form, then imersed lower part in Constrated sugar before Carbonizing them

J. F. Ott.

Feb 12, 1883

Finished Machine to twist very fine wire around end of fiber and inside parts so as to make a perfect contact between inside wire and of fiber

J. F. Ott

Lamp Exp. Feb 12, 1883

Twisted
fibre, put in moulds, and
sent to lamp factory for
Carbonizing

J. F. Ott
M. H. J.

Feb 12, 1883

Taken a solution of
bastaxion mixed by Mr Edison
incarced end of fiber so as to
enlargen the end where contact
is made to Copper wire.

Also incarced tissue
paper then wound the end

J. F. Ott
M. H. J.

Lamp Dept

Feb 13, 1883

Made small device for twisting end of Copper wire on inside parts a taper spiral forming a cup shape to hold fiber until plated together

J. F. Ott.
T.A.E.
M. M. J.

Feb 19. 1883.

Coated ends of fibers with Bassorin Marked Order No 2.

T.A.E.

Feb 20. 1883

Coated ends of fiber with Bassorin marked Order No 4.

T.A.E.
M. M. J.

Lamp Brief

Feb 20. 1883

J. F. Otts

Sent Six brushes with Iron wire to Mr Andrews to be tested on Dynamo for Carring capacity, Heat. and Spark

T. A. E.

Feb 20. 1883.

Lamp Marked Order No 1 A. Copper wire twisted in spiral shape then reamed out and fiber pressed in.

T. A. E.

Feb 20, 1883

Order No. 6. South American fiber twisted 8 strands

T. A. E.

Lamp Bof

Feb 20. 1883

Order No. 7. fibers with enlarged ends with Barrovin dissolved in equal parts Water and Amonia

T. A. E.

Order No 8. ends imcarsed in ~~sugar~~ sugar before carbonizing

T. A. E.

Order No 8 ~~the~~ entire length of fiber saturated with solution marked Order ~~No~~ 2

T. A. E.

J. F. O'H

Lent Exp Order No 2

Tragacanth water & Amonia on end of fibers

T.W.E.
M.M.E.
J.F.Ott

Order 3

T.W.E.
M.M.E.

Tragacanth & Amonia strong on end of fibers

J.F.Ott

Order No 4.

T.W.E.
M.M.E.

Bassorin

Tragacanth treated with water untill swelled up then poured off, remove water used untill all the

soluble Stuff gone away then treated with alchol acetated with Hydrochloric acid then pressed to squeeze it out & then disolved by heat in strong Amonia La Bossorin IX of these fibers were only treated on ends to unite all fibers as one J. F. Ott

M. M. F.

Lamp Exp Order No 9

The entire length of fibe treated with solution marked Order No 2 J. F. Ott

M. M. F.

J. F. Ott

Order No 10

The entire length of fiber treated with solution Marked Bassorin Order No 4.

M. M. F.

J. F. Ott

Order No 11
J. F. Ott

The entire length saturated with solution marked No 3 Amonia strong

T. A. E.
M. M. F.

Order No 12

Two fibers double straight coted with solution marked Order No 2

T. A. E.
M. M. F.
J. F. Ott

Lamp Exp

Order No 13

Two fibers straight TOE
coated with Order No 3

TOE for

Order 14. March 3. 1883

Fiber coated with bassorin,
eight in number, drawn through
draw plates put on foot of
bristol board TOE G. F. Otto
M N F

Order 15 TOE
M N F

Twisted fibers with foot on
ends made of card board and
fastened with bassorin

G. F. Otto March 3.
M, N, F TOE 1883

Lamp Exp

March. 5. 1883
J. F. Ott

Saturated Gum Tragacanth in water untill soft put in a syringe and forced out in threads and left dry. Then cut grave in with saw and sliped fiber in with some moistened Gum, put in mould and sent to Lamp Factory for Carbonizing

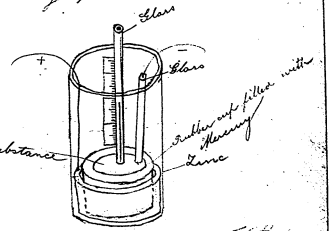
T. A. Edison
M. W. T.

March 6. 1883

Made carbon clamp by winding the wire on a flat ~~mandrill~~ mandrill then placing a flat wedge alongside the carbon

March 6. 1883

Made Meter after the following principle

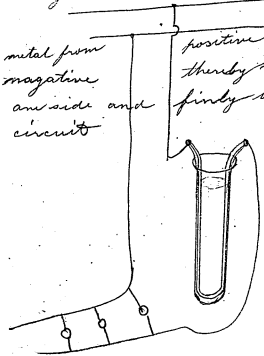


J. F. C. H.

7 pr V

Motor Emf March 6. 1883

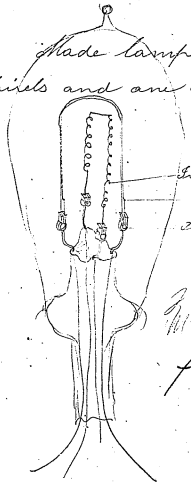
Made safety plug in following manner, the object being that part of the current flowing through the solution carring some of the metal from negative ane side and circuit positive side to thirdly weakning firdly breaking



F. F. O. P.
M. M. F.
F W G

March. 6. 1883

Made lamp with two spirals and one carbon



J. F. Ott
W. H. F.

Tab.

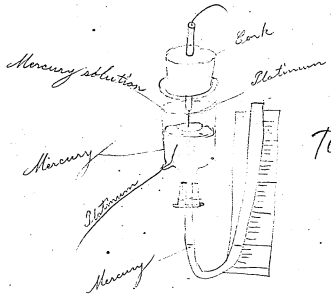
March 8, 1882

Made lamp with Aluminium clamps and leading wires

W
M.M.F

March 8. 1882

Lamp made Later after the following principle



T.A.E

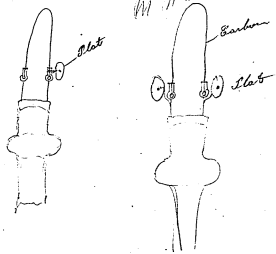
M.M.F

March 9, 1883

J. F. Fitt

Made lamps 2 with one platinum plate one side of clamp, and 2 with plate on each clamp

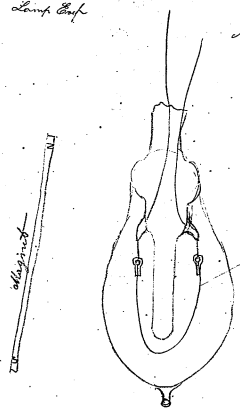
Fig 8



Lamp Exp.

March 9. 1883

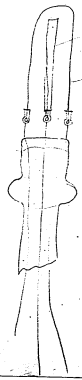
J F Ott



Edison v Thomson } Edison Exhibit F

March. 9. 1883

Made lamp with soft Iron plate between carbon loop



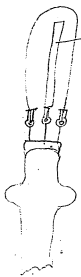
Lamp Book

Edison } Edison's Exhibit
Menlo }

March 10, 1883

J. F. Ott

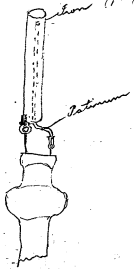
Carbon X
Aluminum X
Zinc X
Tin X
Lead X
Magnesium X
Platinum ✓
Copper X
Silver
Phosphorus
Babbitt
Nickel X
Gold X
Silver fine
Oxidized



March 12, 1883

Made an experiment by sealing in a lamp bulb an Iron tube connected to one pole piece of platinum wire to other pole but not in connection with each other

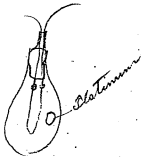
J. W. J. F. Ott
M. N. F.

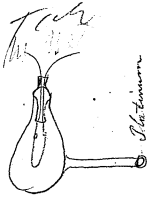


March 12, 1883

J. F. Otto

Made two lamps with piece platinum blown in side of bulb





Clamp & clamp
Carbons in Lamp

March 16 1883

Hammered platinum wire, then drawn through draw plates, having small hole in end to put fiber in, fastened fiber with lamp black and coal tar, then coated the entire wire with lamp black & tar, baked, untill gasses evaporated, then imcased carbon in water, gently blowing flame on clamps, ~~and~~ sucked ~~out~~ fully carbonizing the compound

J. F. H.
M. O.

Blank Exp

March 19, 1883
J. F. Ott

Mixed sugar and lamp black, carbonized found it to blister

Mixed lamp black and Kerosene, Crumbled off

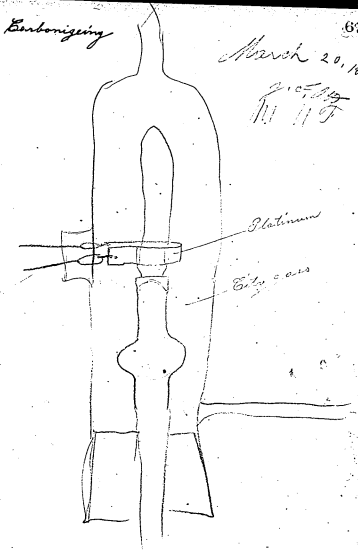
Mixed lamp black and Linseed oil, crumbles off

Tar and Graphite sticks quite well, difficult to apply

TPN

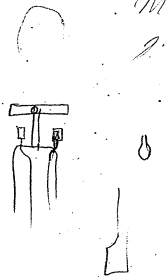
Barbonizeing

March 20, 1883.



Barbarigeing March 20 1883

M. N. F.
J. F. Otto



March 21. 1883

Made device for clamping carbons and plating hydro carbon on bare ends by immersing in oil, and passing current through

March 26. 1883 J. M. N. J.

Made two lamps with gold leaf between bope

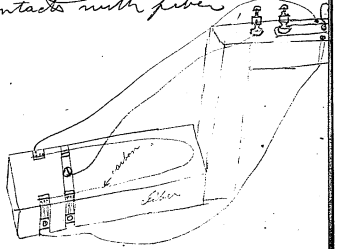
March 27. 1883

Altered clamping device to following principle

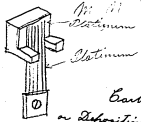
1 having clamping device laying flat so that carbon can easily be handled,

2 second the springs being made of wire instead of sheet so as to make a large number of

contacts with fiber



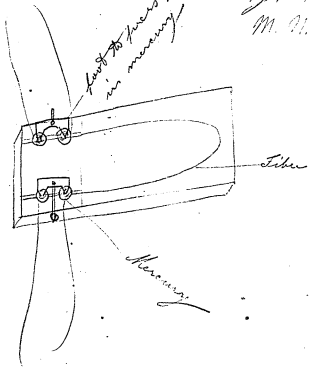
J. F. Ott.
No. 11 F



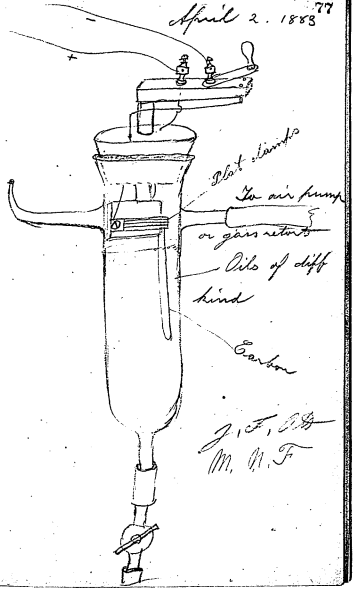
Carbonizing
or Depositing Hydro-
Carbon on lower
part of fiber

March 27, 1883

J. T. Otto
M. N. F.



April 2. 1883

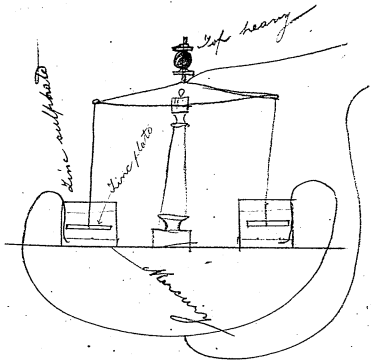


J. F. D.
M. A. F.

April 3, 1883

J. T. Otto
M. N. T.

Made and tested meter

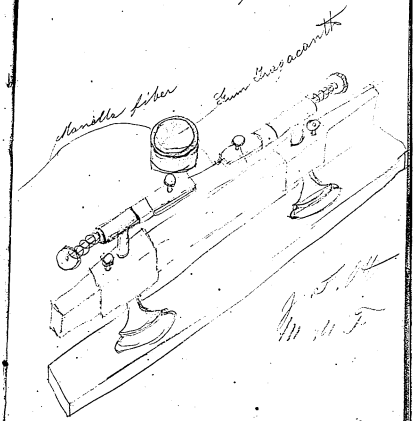


April 3. 1883

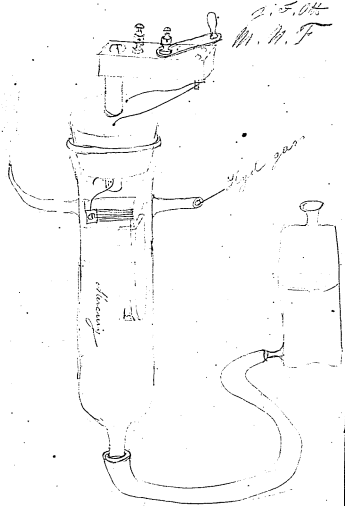
Drawn Manella fibers through Gum Tragacanth tied over a form left dry cut of different grasses that were hollow split one side and sprung over fiber and fastened with Gum Tragacanth

J. F. Ott
M. M. F.

April 4, 1883



April 11, 1883

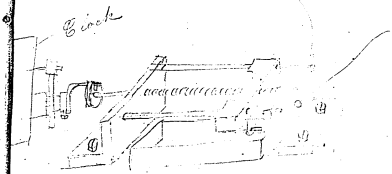


Made small clamps by flattening flat wire then drawing through draw plate ~~small~~ enough to take fibre without feets then slipping sleeve over to spring clamp together and bring large enough to radiate heat of fermentation temperature raising the red heat

[illegible]

M. H. [illegible]

April 12, 1883
G. F. Otto
M. M. P.



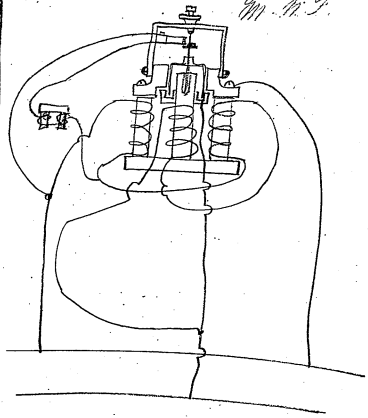
Tested this Model and it give quite fair results

For making Carbon fibre by Hydrocarbon deposit

Meter

May 14. 1883

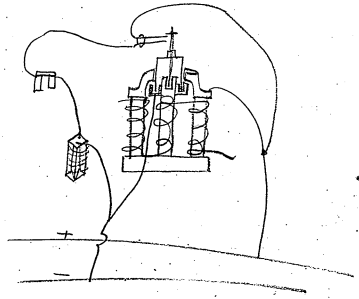
J. F. Ott
W. H. F.



Mites

May 17, 1883

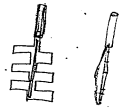
J. F. Ott



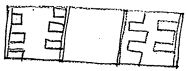
May 17, 1883

J. F. Ott

M. M. F.



Ear



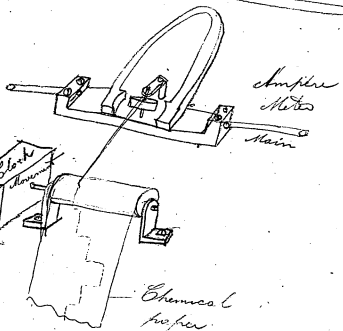
Dash pots
for Meters

June 4, 1883

J. F. Otto

M. M. F.

Main

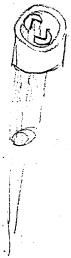


June 14, 1883

M. A. F.

Had Bergmann make rolls

to make clamp to hold bamboo Carbons known as Higgs plant Carbons and also sleeve to slide over them the wire was rolled V shape, and sleeve round



Sleeve

V clamp

Carbon

J. F. Ott

July 9. 1883
M. N. F.

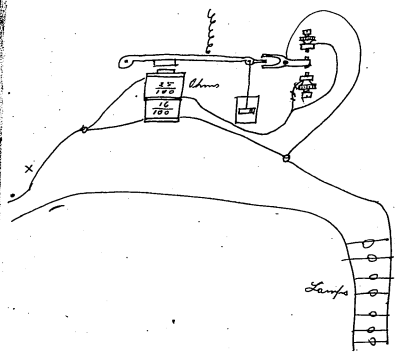
Found that a solution of Permanganate Potass made a very clear mark on paper while the Permanganate Potass fades and the mark remains permanent.

Good for a rapid telegraph

J. T. Lift

Meter

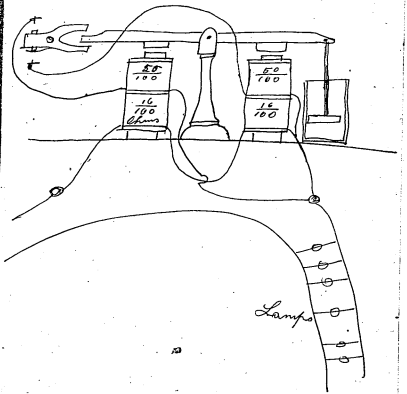
July 24.1883
J.F.O



Motor

Aug 3. 1883

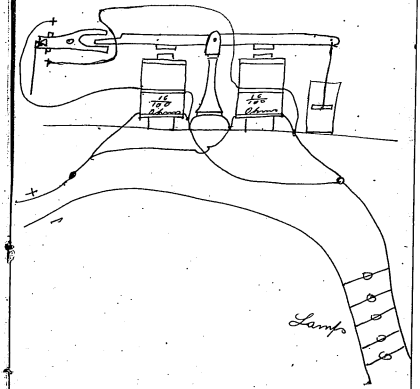
J. F. O



Meter

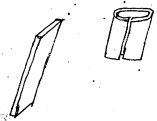
Aug 3. 1883

J. F. Ch



Aug 6. 1883
J. F. O
M. N. T

Made clamps by rolling round copper and Platinum wire flat and sealing them to Platinum wire on Inside parts of lamp then making flat sleave to suite, different withs to take carbon with foot on without.



Sizes of wire used on page No. 111.

New York Aug 6 1883
J. F. Ills M. N. F.

Sizes of copper wire used for making new clamps (Large size) Or platinum

.016 wire will make clamp
.003 Thick
.051 wide
.080 Will make sleeve for clamp
.010 Thick
.110 wide
.150 Length to cut ~~clamp~~ sleeve

1 Die .072
1 Punch .072
1 " .052
1 Core .052 wide
.012 Thick

Small Size

.012 wire will make clamp
.003 Thick
.030 wide

Same size wire used for sleeve except that they are cut shorter

.096 Length to cut sleeve

1 Die .052
1 Punch .052
1 " .031
1 Core .031 wide
.012 Thick

Aug 21. 1883

Bought tissue paper to make Carbon filliments of, by pasting a number of sheets together and cutting out the requisite sizes bending them then Carbonizing them

J. F. Ott

E D Kellogg Aug 25. 1885

Mixed different oils with different Compounds to make Insulation Compound

Hemlock Gum & Resin. very brittle

Tar & Burgundy Pitch very fair

Resin & Chalk not good very brittle

Hemlock gum & Chalk no good very brittle

Tar & Starch very fair quite hard

Tar & Chalk too soft did not put enough chalk in

Tar & Resin got too much tar in made it too soft

Resin & Linseed Oil. made it with too little oil at first then got too much in could be made very good I think

Hemlock Gum & Linseed Oil. would be very good without much Oil put in too much

Gum Damar + Raw Linseed Oil. — good
" " Fusel Oil + Resin. — good
" " + Oil Cade. — too brittle
" " + Cotton seed Oil. — gummy
" " + Castor Oil. — too soft but "V."
" " + Paraffine Oil. — fair
" " Resin + Chalk. — brittle.
" " Flour + Castor Oil — fair
Burg Pitch + Linseed Oil — too soft.
" " + Cotton seed Oil — too soft
" " + Castor Oil — too soft.
" " Linseed Oil + Chalk too thin
" " + Paraffine Oil — fair.

E. D. Kellogg

Aug. 25 1883

Resin + Linseed Oil Brittle
good but too soft with more oil

Resin + Paraffine Oil soft
Put in too much Oil

Tar + Hemlock gum good but
somewhat Brittle could better it
by adding a little Oil

Hamilton. Aug. 2nd 1888.

Gum Myrrh + Castor Oil. — won't mix
" " + Linseed " — " "
" Zanzibar + Castor Oil. — won't mix well.
" Copal + Castor Oil — very good.
" " + Linseed " — too brittle
" " + Cotton seed Oil. — too " .
" " + Olive Oil. — brittle.
Gum Sandarach + Castor Oil — very good.
" " + Linseed Oil. — brittle N.G.
" " + Cotton seed " — " N.G.
Gum Amber + Castor Oil — won't mix well.
" " + Linseed Oil. — " " .
Gum Benzoin Castor Oil. — fair but brittle
Gum Zanzibar + Castor Oil. — too soft.
Gum Copal + Castor Oil. — good.

Resin Tar + Linseed oil good
but soft

Resin, Hemlock gum + Cottonseed Oil
good but somewhat Brittle

Resin + Cottonseed Oil good but
little bit to soft

Hemlock gum + Cottonseed oil
very soft

Hemlock gum + Castor oil
very soft G Bulley

Hemlock gum Castor Oil + Gum Myrrh
very soft gum myrrh did
not mix with other things

Hemlock gum + Paraffine oil
good but brittle
with more oil, too soft

Hemlock gum, + Oil Cade
very brittle add more Oil

Red Lead Resin + Linseed Oil
very Brittle
with more oil still brittle

Hamilton. Aug 28th 1888.

Gum Damar + Castor Oil. - fair. this time.
" " + Paraffine Oil. - too much gum.
Burg Pitch + Castor Oil. - fair
" " + Paraffine Oil. - too brittle
" " + Cotton seed Oil. - gummy.
Gum Zanzibar + Castor Oil. - won't mix well.
" " Castor Oil + Sulphur. - no good.
" " Cotton seed Oil. - won't mix
" " Linseed Oil. - gum won't dissolve.
" " + Oil Cade. - won't mix well.
Burg Pitch + Petroleum wax - too brittle
Zanzibar, Tar, Sulphur + Castor Oil - N. G.
Gum Damar + Petroleum wax - too brittle

Red Lead + Tar. very good

Red Lead, Resin + Castor Oil – very Brittle tried 2 all brittle

Red lead Resin + Paraffine Oil – tried 2 grades all brittle

Chalk Resin + Paraffine Oil – very good

Chalk Resin + Castor Oil – very good

S. D. Wells Jr

Hemlock gum + Olive Oil – good but soft

Resin + Olive Oil – Brittle

Gum Ammoniac + Castor Oil no good gum dont mix with oil

Gum Olibanum Red lead + Linseed Oil no good gum dont mix with oil.

Gum Zanzibar + Oil Myrbane — N.G.
Burgundy Pitch + Oil Myrbane. — fair but too soft
Benzoin, Oil Myrbane + Petroleum wax, +
Fire Clay — will not mix well.
Asphaltum + Petroleum wax — fair a little soft
" Petroleum wax + Clay — too thin.
Hemlock Gum + Oil Myrbane — good
Aloes Capens will not dissolve in Oils.
Balsam Tolu + Castor Oil —
" " + Linseed Oil — brittle. N.G.
" " Linseed Oil, Clay + Tar — brittle
" " + Petroleum wax — too brittle
" " Petroleum wax + Tar — " "
" " + Tar — rather good.

Gum Zanzibar + Aniline Oil – N.G.
" Damar + " " – pretty good
" " + Oil of Tar – fair, a little brittle
Burg Pitch + Oil of Tar – a little brittle
" " + Aniline Oil – " "
Catechu + Castor Oil, wont mix at all.
Red Lead + Petroleum wont – too soft.
Fire Clay + Oil of Tar – N.G.
Balsam Tolu + Oil of Tar – fair, a little soft
Resin, Chalk, + Oil of Tar – too brittle.
Balsam Tolu + Aniline Oil – not tough enough.

Aug 29 1883 E D Kellogg

Resin + Linseed Oil fair - too soft
Asphaltum + " " very good
" + Oil Spike and good
" + Castor Oil front mix
" + Olive Oil fair too soft
" + Paraffine Oil very good
" + Cottonseed Oil fair

Resin

E D Kellogg

Aug 30 1883

Asphaltum + Aniline Oil fair
" + Oil Tar good
Resin + Aniline Oil brittle
Resin + Oil Tar good.
" + " Myrbane good
" + Petroleum wax too sticky
Aniline Oil + Hemlock gum good

E D Kellogg

Gum Camphor + Aniline Oil dont mix
" " Aniline Oil + Resin good
Gum Arabic + Oil Myrbane dont mix
Gum Camphor Oil Myrbane + Resin too soft
" " Palm Oil, stiff good but little soft
" " Paraffine Oil + Resin very good
" " Linseed " + " very fair
" " Oil Tar + wood tar good
Tar + Oil Myrbane good
" " " + Sulphur fair
" + Aniline Oil good
" + Palm " H. G. dont mix

E. D. Kellogg

Hamilton Sept. 8th 1883. 139

Gum Lac + Castor Oil – not tough enough
" " + Linseed " – " "
" " + Cotton seed Oil – too gummy.
" " + Paraffine Oil – " "
" " + Aniline Oil – too brittle
" " + Oil Myrbane – " "
" " + Oil of Tar – too brittle
" " + Petroleum wax – too soft.
" " + Palm Oil – brittle.
" " + Copal Varnish – too brittle.
" " Copal Varnish + Sulphur – brittle
" " + Oil of Nutmeg – too thin
" " Oil of Nutmeg + Sulphur – brittle
" " + Tar – a little too soft.
" " Tar + Sulphur – " "

Gum Euphorbium + Oil Myrtane - dont mix
" " + Amber Oil - " "
Resin + Palm Oil - very good
" + Copal Varnish - weather brittle
" + Oil Nutmeg - rather too brittle
Hemlock gum + Palm Oil - good but too soft
" " + Oil Nutmeg - good averaging 2
" " + Copal - Varnish very good
" " + Oil Tar - good but not tough
" " + " Myrtane - good averaging 2
Asphaltum + Copal Varnish - good
" + Oil Nutmeg good averaging 2
" + Palm Oil good " 2

Hamilton. Sept 4: 1883

Gum Damar + Copal Varnish. — a little soft.
" " + Palm Oil — too sticky.
" " + Oil of Nutmeg — too brittle
" Sandarch + Copal Varnish — a little soft.
" Benzoin + " " — won't omp.
Burg Pitch + " " — brittle.
Balsam Tolu + " " — brittle

Sept 5 - 1883

Gum Assafoetida & Oil Myrbane - dont mix
Asphaltum & Petrolium Tar - not tough enough
Hemlock gum & " " - too soft
Asphaltum & Aniline Oil - not tough enough
Aloes Succotrine & Aniline Oil - Brittle
" " & Oil Myrbane - dont mix
" " & Castor Oil dont mix
" " & Palm Oil dont mix
" " & Oil Tar dont mix
" " & Linseed Oil dont mix

E. D. Kellogg

Hamilton. Sept. 5th 1883.

Balsam Tolu + Palm Oil. — very brittle
" " + Paraffine Oil. — " "
" " + Cotton seed Oil. — " "
" " + Oil Myrbane. — not tough.
" " + " of Nutmeg. — too brittle
Burg Pitch + Palm Oil. — " sticky
" " + Oil of Nutmeg — too brittle
Gum Sandarch + Aniline Oil. — brittle
" " + Oil Myrbane. —
" " + Oil of Nutmeg — too brittle
" " + Palm Oil — working well
" Senegal + Aniline Oil. — no good
" " + Castor Oil. — " "
Catchew + Aniline Oil — not tough.

——— " ———

Gum Thus + Linseed Oil, mixed with gutta Percha dissolved in Carbon bisulphide. — very sticky.

Gutta Percha + Gum Thus dissolved together in Coal Tar. — good, and very tough.

Gutta Percha + Gum Thus dissolved together in Coal Tar + Sulphur — quite brittle.

Gum Thus, Linseed Oil + Litharge. — very brittle.

Burg Pitch, Aniline Oil + Litharge — very brittle.

Gum Damar + Gutta Percha dissolved together in Coal Tar — a little brittle, not tough.

Gum Damar dissolved in Castor Oil + then mixed with Glue dissolved in Acetic Acid — very soft and sticky. —

— J. —

Sept 6 1883

~~E D Tallost~~

Acetic Acid Sol of Glue and
Oil Myrbane dont mix
but Glue gets tough as it
gets cold.
Acetic Acid Sol. of Glue
aniline oil & Hemlock gum
mix but dont get hard
Tar Starch & Gutta Percha
does not get tough
Tar Gutta Percha Asphaltum
Petroleum wax & Oil Myrbane
gets hard but not tough

E. D. Kellogg Sept 7 1883

Acetic Acid Sol. Glue, mixed with Asphaltum — no good not tough

Acetic Acid Sol. Glue & hemlock gum & Aniline Oil — too soft

Acetic Acid Sol Glue + Asphaltum + Cotton Seed Oil — dont mix well not tough

Tar Asphaltum Hemlock gum + Copal gum — not tough

Tar Asphaltum gum Copal & Sulphur — not tough

Tar Asphaltum + Gutta Percha — H. G. not tough.

Linseed Oil boiled moderately until quite thick & then mixed with Gum Thus. —
— too brittle —.

Linseed Oil boiled til quite thick, then mixed with Gum Thus together with Glue, dissolved in Acetic Acid. — very soft.

Linseed Oil, Asphaltum & Calcined Magnesia mixed together — very tough.

Asphaltum & Litharge dissolved together in Linseed Oil. — too soft not tough.

Gum Thus & Copal dissolved together in Lin — quite tough but a little too soft. —

Gum Thus & Copal dissolved together in Lin & mixed with Sulphur — very brittle.

Gum Thus & Gum Damar dissolved together in Lin. — too brittle.

Sept 8 1883

Asphaltum. Gum Copal & Cotton seed Oil – tough but not elastic enough

Asphaltum Oxydized Tar, Aniline Oil & Gum Copal – tough but not elastic Enough.

Ditto with flour. Kneaded in. brittle but tough.

E D Kellogg.

Hamilton, Sept. 8th 1883. 159

Gum Thus dissolved in, Linseed Oil boiled down until quite thick — too brittle and not tough.

Gum Copal dissolved in Oxydized Tar & Aniline Oil. — flyable but not tough

Gum Thus & Gum Copal dissolved together in Tar & Aniline Oil — brittle.

Gum Copal dissolved in tar & then put under pressure — crumbles up.

" "

Gum Thus & Gum Sandarch dissolved together in Candle Tar — very brittle.
Gum Thus & Sandarch dissolved together in Candle Tar and Linseed Oil. — too soft.
ditto, ditto, ditto, + Sulphur — too brittle.
Sandarch dissolved in Candle Tar and Castor Oil — too soft and very sticky.
Gum Thus & Sandarch mixed with Castor Oil — brittle.
ditto, ditto, ditto, + Refined Asphaltum — too soft and sticky.
Hemlock Gum & Thus with Candle Tar and Castor Oil — too soft and sticky.
ditto, ditto, ditto + Calcined Magnesia — too soft and a little sticky.
Rosin will not mix with Oil.

Experiment Sept 10 1883

Resin & Candle Tar — Brittle too

" " " & Camline Oil — Brittle

Candle Tar & Red Lead — Tough but not elastic.

Candle Tar Asphaltum — Tough but not elastic.

Candle Tar & Kruger's Comp. — Brittle

Candle Tar Asphaltum & Cotton-seed Oil — not Tough nor Elastic enough

Candle Tar Asphaltum Cotton seed Oil & Sulphur — Brittle

Candle Tar Asphaltum & Hemlock gum — Tough but Brittle.

Candle Tar Asphaltum Hemlock gum & Sulphur — Brittle

Candle Tar Resin & Asphaltum — not Tough nor Elastic enough

Candle Tar Resin Asphaltum & Sulphur — very Brittle

Candle Tar Resin & Hemlock gum — N.G. too Soft

Candle Tar Resin Hemlock gum & Sulphur — Brittle

E.D.K.

Gum Sandarch + Oil Juniper Wood - brittle
" " + Balsam Peru - not tough
" " + Oil White Pine - brittle.
" " + Oil Orange - too "
" " + " Cinnamon - too sticky.
" " + " Fennel - too brittle.
" " + " Lemon grass - " "
" " + " Citronella - not elastic
" " + " Cubebs - too brittle.
" " + " Tansy - " "
" " + " Lemon - " "
Gum Thus + Copal dissolved together in Can
dle Tar — too brittle.
Gum Thus + Copal dissolved together in Candle
Tar + Castor Oil — tough but not very elastic
Gum Thus + Copal dissolved in Castor Oil. —
rather elastic but too sticky.
Gum Thus + Copal dissolved in Castor Oil +
Copal Varnish — a little too sticky.
but quite elastic. — [illegible]

E. D. Gillogg Sept. 11. 1883.

Gums Thus & Copal & Oil Cubeba — little too Brittle

Gums Thus & Copal & Cotton seed Oil — Rather Brittle

Ditto + Sulphur — Brittle

Resin Gum Copal & Myrtane Oil — Brittle

Ditto + Sulphur — Very Brittle

Candle Tar Gum Copal & Resin — N. G.

Ditto & Sulphur Brittle

Candle Tar & Refined Asphaltum — Tough but not elastic

Ditto with Gum Copal — Brittle

Candle Tar Gum Thus & Asphaltum — Brittle

Ditto & Copal Gum — Very Brittle

Gum Thus + Copal dissolved together in Asphaltum + Cottonseed Oil. — not elastic.

ditto ditto ditto + Turpentine — sticky.

Gum Thus + Copal dissolved in Cottonseed Oil mixed with small portion of Gutta Percha dissolved in Turpentine. — tough but not elastic

ditto, ditto, ditto, + Sulphur — brittle.

Asphaltum, Resin + Copal gum dissolved together in Cottonseed + Linseed Oil. — not elastic enough.

Gum Thus + Copal dissolved in Coal Tar + Cottonseed Oil. — tough but not very elastic

ditto, ditto, ditto + Copal Varnish. — brittle.

Gum Thus + Copal dissolved in Coal Tar. quite elastic + not very sticky.

C. D. Pellogg Sept 12 1883

~~Ha~~ Resin Thus Candle Tar
Copal & Aniline Oil - good
but too sticky

Gums Thus & Copal & Resin &
Aniline Oil - good but too Sticky

Ditto & Sulphur - Brittle

Gum Copal & Resin in Aniline
Oil - elastic but sticky

Ditto Ditto & Sulphur - Very Brittle

Asphaltum & Gum Copal in
Aniline Oil - N. G. not tough
or Elastic

Ditto with little Thus - elastic
but Sticky

"

E. D. Kellogg Sept 13 1886

Asphaltum Copal gum Thus in Cottonseed Oil } No good
Resin Copalgum } Thus in Aniline Oil – Very Elastic but sticky
do. do. do. do. with Sulphur – too Brittle
Resin Gums Copal } Thus in Myrbane Oil – Elastic } Tough but sticky
do. do. do. do. } Sulphur – Tough } Elastic but too sticky
Resin Copal } Thus in Oil Tar – Brittle
do-do-do in Cotton seed Oil – not tough or elastic
do do do do do } Sulphur – Brittle
Resin Copal } Thus in Paraffine Oil – No Good
Resin } Thus in Oil Myrbane Brittle
do do. do. do. ~~and~~ Asphaltum } Copal – Fair elastic but sticky

Gum Thus + Copal mixed in Coal Tar + Castor Oil. — not very sticky + quite elastic.

Gum Thus, Copal, Coal Tar + Linseed Oil. — rather elastic but too sticky.

Gum Thus + Copal mixed in Coal Tar + Linseed Oil — elastic but sticky.

Gum Thus + Copal mixed in Coal Tar + Oil Myrbane — elastic but a little sticky.

Gum Thus + Copal mixed in Palm Oil + Coal Tar. — elastic but still a little sticky.

Gum Thus + Copal mixed in Coal Tar + Oil Cade. — elastic but yet a little sticky.

Gum Thus + Copal mixed in Coal Tar + Paraffine Oil — elastic and a little sticky.

Gum Thus, Copal, Hemlock Gum + Tar — elastic and sticky.

Gum Thus, Copal, Hemlock Gum + Tar + Castor Oil — elastic + sticky.

Gum Thus, Resin + Copal mixed in Coal Tar + Castor Oil. — too brittle.

Gum Thus + Copal dissolved in Coal Tar and Organum Oil. — elastic but sticky.
ditto, ditto, ditto + Sulphur — brittle.
Gum Thus + Copal dissolved in Coal Tar + Oil Spruce — elastic but a little sticky.
ditto, ditto, ditto, + Sulphur — brittle.
Gum Thus + Copal dissolved in Coal Tar + Oil Succini — very elastic but sticky
ditto, ditto, ditto, + Sulphur — brittle.
Gum. Thus + Copal dissolved in Coal Tar + Oreade Oil. — elastic but quite sticky.
ditto, ditto, ditto, + Sulphur. — brittle

Sizes of stock for making
Clamps for 100. C.P. lamps

$\frac{9}{1000}$ thick $\frac{72}{1000}$ wide

A. Del Hamilton March 15, 85.

Bleaching by Electricity.

Soaked material in salt water & passed it over two brass rollers, put on the Dynamo current with resistance in circuit, found that chlorine combined with the brass, leaving a green deposit on the muslin.

A. Del H. March 15-85.

Now by carbon rollers, chlorine given off no deposit, but it doesn't seem to bleach, only tory the muslin.

Condenser Experiment.

Dipped thin sheets tissue papers in boiled linseed oil & then hung up to dry, to use for insulation.

Caramel wrapping Paper.

Dipped tissue paper in solution of linseed oil + Turpentine ½ + ½, also linseed + Benzine, + linseed + Kerosene)

May 5th 85.

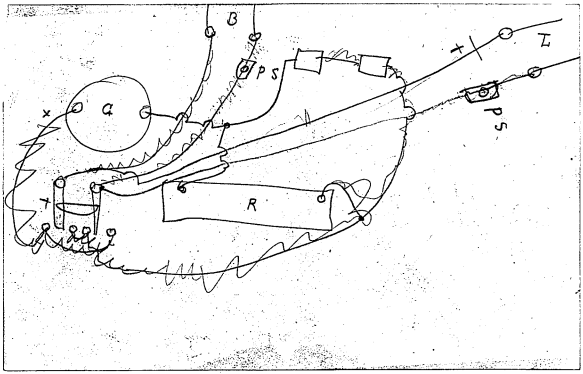
Colored the solutions with different aniline colors, dragons blood + gamboges; + perfumed it with oil anise, oil Clove, Sassafras, + White Thyme + lemongrass.

May 21. 98.

Storage Battery. —

Saturated soft thin paper in a solution of $ZnSO_4 + MnSO_4$ + laid them between sheets of tin foil as the insulations in a condenser + charged it with two carbon cells.

[ITEM FOUND IN BOOK]



[ITEM FOUND IN BOOK]

6470
9894
16364